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AIRCRAFT GENERATION EQUIPMENT EMISSIONS ESTIMATOR  
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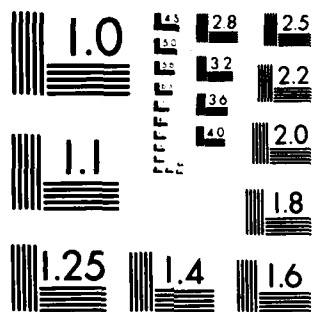
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# AIRCRAFT GENERATION EQUIPMENT EMISSIONS ESTIMATOR (AGEEE)

G.D. SEITCHEK, D.D. BERLINRUT, L.A. RAMOS

ENVIRONICS DIVISION  
ENVIRONMENTAL SCIENCES BRANCH

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This report is designed to serve as a handbook for computing emissions from aircraft generation equipment (AGE), both by hand and by using a microcomputer. Emissions factors and the required equations are provided, along with examples which illustrate how to perform the calculations. The techniques described in the report are approximations, and should only be used for estimating emissions.		

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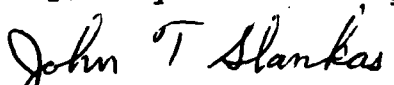
This report was prepared by the Air Force Engineering and Services Center (AFESC), Tyndall AFB, Florida. The work was accomplished under Job Order Number 21039015. Capt Dan Berlinrut and Lt Glenn Seitchek were the project officers.


The methodology presented in this report was developed to assist base - level environmental personnel in calculating annual airbase emissions produced by aircraft generation equipment (AGE). The model was developed by the Air Force for the purposes of predicting air pollutant concentrations in the vicinities of airports. The results and recommendations do not represent Air Force policy, but can be used by base personnel to estimate the impact of equipment operations on local air quality.

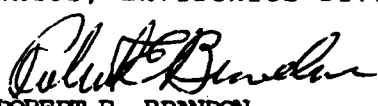
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## SECTION I

### INTRODUCTION

The Aircraft Generation Equipment Emissions Estimator (AGEEE) is a screening methodology to indicate any significant air quality impact from U.S. Air Force aircraft. This report contains all the data needed to perform AGEEE analyses. Aircraft type, number of missions, annual mean temperature, annual temperature variation, and AGE type are the only input data required for an AGEEE analysis. The analysis will estimate AGE emissions resulting from base operations. If AGEEE indicates a possible air pollution problem, a more detailed base air quality analysis (e.g., Air Quality Assessment Model) may have to be performed.

The AGEEE air quality analysis is not site-specific. The analysis can be performed by base-level personnel at any Air Force base. AGEEE will allow for preliminary air quality impact analysis of mission changes at base level, and result in the more effective use of Air Force manpower and resources.

## SECTION II

### BACKGROUND

The preliminary assessment of an Air Force base-wide emissions inventory is usually performed at the base level. In the past this analysis has been primarily an update of the aircraft emissions inventory. Emissions from Aircraft Generation Equipment (AGE) have generally been neglected, because adequate information has not been available.

Base personnel do not have the resources to spend on complex dispersion evaluations, (i.e., AQAM). They only require a tool to determine the annual emissions and the worst-case downfield pollution concentrations to obtain an estimate of the impact of base sources on air quality. This estimate gives base personnel an indication of a potential air pollution problem. If the estimate indicates a possible problem, a more detailed air quality analysis will be required.

The base-level personnel require an analytical method to determine the emissions from AGE and the impact of these emissions on air quality. The procedure must contain all the data required to make an AGE emission and an air quality impact analysis. It must only require minimal data to eliminate the wasted man-hours. AGEEE was developed for these reasons, and thus will aid in making the base emissions inventory more accurate.

### SECTION III METHODOLOGY

#### A. AGE EMISSION FACTORS

Aircraft generation equipment emission factors were determined by Dr J.E. Sickles, and Dr J.G. Haidt of Research Triangle Institute, under work funded by the AFESC (ESL-TR-81-60). Emissions data are not available in most cases, because the engines have been in production and/or service for over 20 years and no regulations exist now or at the time of the engine acquisition to require emissions testing. As a result, most of the emission factors assigned to the AGE were based on the data in Reference 1. A comprehensive list of AGE is shown in Table 1.

Average emissions factors for selected AGE are listed in Table 2. Emissions factors can be determined on the basis of horsepower and/or fuel consumption rate. Both methods were used to determine emission factors for AGE. Except as noted to the contrary, the values given in Table 2 represent averages of emissions factors determined by the two methods. The discrepancies between the two methods generally did not exceed a factor of two, but in a few cases they were as high as a factor of ten.

It should be noted that the SO<sub>2</sub> emissions factors were calculated based on observed fuel consumption rates and assumed 0.01 weight percent sulfur in Mogas and 0.05 weight sulfur in JP-4 (Reference 2). In addition, survey results indicate that JP-4 is generally used in both diesel and turbine-driven AGE. Emissions factors for the turbine-powered AGE burning JP-4 were secured from Garrett Air Research. No emissions factors, however, are available for diesel engines burning JP-4 instead of diesel fuel. Therefore, it was assumed that emissions factors for diesel engines burning diesel fuel are identical to those for diesel engines burning JP-4.

To determine the emission factors for AGE not listed in Table 2, the user must interpolate the factors which are available by using the known characteristics of the desired piece of AGE, and those characteristics for which emission factors are

TABLE 1. COMPREHENSIVE LIST OF AGE

<u>Type</u>	<u>Designation</u>	<u>Engine Type<sup>a</sup></u>
Heater	H1	1
	MC1 (HTR)	1
	1H1	2
Cooler	MA3	1
	A3	1
	MA1A (CLR)	1
	Cooler-D	2
	MD3	1
Generator	C26	1
	MD28	1
	MB15	2
	90G20P	2
	MB17	2
	Generator-D	2
	AM32A60	3
	AM32A60A	3
	EMU12E	3
	MC1A	1
	MC2A	1
Compressor	MC11	1
	MC1 (COM)	1
	MC7	1
	MC1A-D	2
	DR600	2
	MA1A	3
	MJ1 (HTS)	1
	MJ2A	1
	TTU228E	1
	TTU228E1A	1
Hydraulic Test Stand	D5	1
	TTU228E1B	2
	MJ1 (BMB)	1
	MJ1A	1
	MHU83E	1
	MHU83AE	1
	MHU83BE	1
Light Cart	NF2	1
	M32T1	1
	V4	1
	MB1	1
Pressure Tester	M27M1	1
	Blower-G	1
Jacking Manifold	Deicer-G	1
	Washer-G	1
	Sprayer-G	1
	Empennage-G	1
	Empennage-D	2
	Welder-D	2
Miscellaneous		

TABLE 1. COMPREHENSIVE LIST OF AGE (CONCLUDED)

<u>Type</u>	<u>Designation</u>	<u>Engine Type<sup>a</sup></u>
Vehicles	Tractor-G	1
	Tug-G	1
	Lift-G	1
	Loader-G	1
	Pickup-G	1
	Van-G	1
	MB4	1
	U18	1
	Lift-D	2
	Loader-D	2
	MB2	2
	TD300SL	2

<sup>a</sup>1=gasoline piston; 2=diesel piston; 3=turbine

given. This procedure is sound, because the emission factors that are given are only estimates, not actual values. There is no necessity for absolute accuracy, only relative accuracy.

## B. AIRBASE-DEPENDENT ELEMENTS

### 1. Availability Factor ( $\beta$ )

The availability factor is intended to account for the possibility that an airbase possesses AGE of different types which are functionally equivalent and used interchangeably, depending on availability. The availability factor is calculated based on the percentage of the total shared by each type of interchangeable AGE. For example, the H1 and 1H1 heaters are interchangeable. If a given airbase has 13 H1s and 7 1H1s, then the availability factors are .65 and .35, respectively.

### 2. Temperature Factor ( $\gamma$ )

Temperature affects the frequency of use of heaters and coolers. Generators are used for every landing and takeoff (LTO), while heaters find use during only a fraction of the annual LTOs. Therefore, fuel consumption and emissions per LTO of heaters and coolers on an average basis must be reduced. A temperature factor is introduced to account for this reduction. For a given annual mean temperature, ( $\bar{T}$ ) and temperature variation ( $\Delta T$ ) at an airbase, Equation (1) defines the factor for heaters and Equation (2) for coolers.

$$\gamma_{\text{heater}} = \frac{\left[40 - \bar{T} + \frac{\Delta \bar{T}}{2}\right]^2}{2 \left[\frac{\Delta \bar{T}}{2}\right]^2} \quad \text{unless if } 40 - \bar{T} + \frac{\Delta \bar{T}}{2} \leq 0 \text{ then } \gamma = 0 \quad (1)$$

$$\gamma_{\text{cooler}} = \frac{\left[\bar{T} + \frac{\Delta \bar{T}}{2} - 80\right]^2}{2 \left[\frac{\Delta \bar{T}}{2}\right]^2} \quad \text{unless if } \bar{T} + \frac{\Delta \bar{T}}{2} - 80 \leq 0 \text{ then } \gamma = 0 \quad (2)$$

All temperatures are in °F.

SECTION IV  
HAND CALCULATIONS

A. PROCEDURE

This section contains examples of how AGE emissions could be calculated by hand.

The steps to be taken are as follows:

1. Determine the aircraft in question
2. Determine the desired AGE and associated temperature factor (  $\gamma$  )
  - a. Heater - Equation (1)
  - b. Cooler - Equation (2)
  - c. Other AGE -  $\gamma = 1$
3. Calculate the availability factor (  $\beta$  )

$$\beta = \frac{\text{Number of specific AGE}}{\text{Total number of general type AGE}}$$

Use  $\beta = 1$  unless a base has different types of AGE which function equivalently.

See Section III.B.1 for more information.

4. Find the Standard Universal Operating Time (t) in Table 3.
5. Calculate the Average Service Time ( $\bar{t}$ ).

$$\bar{t} = \gamma t \beta$$

6. Calculate the average emissions ( $\bar{W}$ ) using the emission factors (  $\pi$  ) in Table 2.

$$\bar{W} = \frac{\pi \bar{t}}{1,000} = \text{kg pollutant per LTO}$$

To determine the total pollutants (W), multiply  $\bar{W}$  by the total number of LTOs (L).

$$W = \bar{W}L$$

TABLE 2. AVERAGE EMISSIONS FACTORS FOR SELECTED AGE

Type	Designation	Engine Characteristics				Factors (g/hr)				
		in <sup>3</sup>	HP	Mogas	Diesel/JP-4	CO	HC	NOx	SOx	Part
Heater	H1	7.1	2.5	.	.	3376	212.0	67	2.1	6.1
	1H1	17.3	3.6	.	.	64	28.0	291	7.3	21.0
Cooler	MA-3	471.0	175.0	.	.	24036	933.0	623	3.9	40.0
	MD-3	471.0	175.0	.	.	24124	936.0	625	3.9	40.0
Compressor	32A-60	NA	160.0	.	.T	1688 <sup>b</sup>	14.0 <sup>b</sup>	332 <sup>b</sup>	79.1	45.0 <sup>e</sup>
	90G-20P	284.0	148.0	.	.	294	129.0	1355	8.8	97.0
	MC-1A	107.0	30.0	.	.	4685	162.0	122	1.3	7.7
	MC-1A	77.0	18.0	.	.	122 <sup>d</sup>	65.0 <sup>d</sup>	128 <sup>d</sup>	5.6	24.0
	MC-2A	50.0	10.3	.	.	2466	155.0	49	0.79	4.4
	DR-600	426.0	200.0	.	.	527	231.0	2432	28.4	174.0
Hydraulic Test	MA-1A	NA	NA	.	.T	806 <sup>c</sup>	6.7 <sup>c</sup>	159 <sup>c</sup>	37.8	21.0 <sup>e</sup>
	TTU-228E	471.0	175.0	.	.	23141	902.0	600	3.4	38.0
Stand	MJ-1	107.0	30.0	.	.	4685	162.0	122	0.79	7.8
	NF-2	50.0	10.3	.	.	2466	155.0	49	0.74	4.4
Bomblift	M32T-1	471.0	175.0	.	.	21530	846.0	558	2.4	35.0
	M27M-1	107.0	25.0	.	.	4367	152.0	113	1.1	7.1
Light Cart										
Pressure Tester										
Jack										

a Unless noted otherwise, emission factors were taken from Reference 1 (AP-42). These factors are the average of factors based on horsepower and on fuel consumption.

b Personal communication with Bob Stefun on Garrett Air Research.

c Extrapolated from data received from Bob Stefun of Garrett Air Research.

d Personal communication with Joe Lange of Hatz Diesel.

e Estimated from oil-fired turbine electric generators Reference 1 (AP-42).

f Calculated from fuel consumption and assumed 0.01 wt% sulfur in Mogas and 0.05 wt% sulfur in JP-4, see Reference 2.

T Turbine powered, burning JP-4.



TABLE 3. OPERATION TIMES (HOURS) FOR AGE FOR SELECTED AIRCRAFT

AGE	B52	FBI11	A7	AI0	A37	T37	C5	C7	C9	CI30	CI31	CI35	CI41	T43	KCI35
H1	2.69	2.69	0.23	0.23	0.23	0.23	3.21	3.21	3.21	3.21	3.21	3.21	3.21		2.87
1H1	2.69	2.69	0.23	0.23	0.23	0.23	3.21	3.21	3.21	3.21	3.21	3.21	3.21		2.87
MA3	2.20						1.83	1.33		1.33		1.33	1.33		0.78
MD3	3.11			0.25	0.25	0.25	3.12	3.12	3.12	3.12	3.12	3.12	3.12		5.16
90G20P	5.61		0.50				7.60			0		7.60	7.60		5.91
AM32A60	5.06	5.06	4.41	4.41			3.85			0		3.85	3.85	3.85	4.68
MC1A	1.03	1.03	0.10	0.10	0.10		0.75	0.75	0.75	0.75	0.75	0.75	0.75		0.49
MC11	0						0			0					
MC2A	0.37	0.37	0.16	0.16	0.16		0.92	0.92		0.92	0.92	0.92	0.92		0.32
1MC1A	1.03	1.03	0.10	0.10	0.10		0.75	0.75	0.75	0.75	0.75	0.75	0.75		0.49
MA1A	2.20		0.67				0.46			0.46		0.46	0.46		0.31
TTU228E	0.09		0.14				1.18			1.18		1.18	1.18		0.12
MJ1	0.09	0.09				0.14	1.18	1.18		1.18		1.18	1.18		0.12
MJ2A	0			0.14			1.18			1.18		1.18	1.18		0.12
TTU228E18	0.09		0.14				1.18			1.18		1.18	1.18		0.12
MJ1	3.25		2.11		2.11		0			0		0	0		0.12
MJ1A	3.25			2.11			0			0		0	0		
MHJ83AE	1.37	1.37	2.04	2.04	2.04		0			0		0	0		
NF2	3.36	3.36	0.23	0.23	0.23		3.18	3.18	3.18	3.18	3.18	3.18	3.18		4.66
M32T1	0		0.13	0.13			0			0		0	0		
M27M1	0.40						0.38			0.38		0.38	0.38		0.19

TABLE 3. OPERATION TIMES (HOURS) FOR AGE FOR SELECTED AIRCRAFT (CONCLUDED)

AGE	F4	F15	F16	F105	F106	F111	T33	T38	T39	H1	H3	H53	O2	OM10
H1	0.70	0.70	0.70	0.70	0.70	0.70	0.70		0.70	1.00		1.00	0	0
1H1	0.70	0.70	0.70	0.70	0.70	0.70	0.70		0.70	1.00		1.00	0	0
MA3	0.58				0.58	0			0.58				0	0
MD3	0.53		0	0.53	0.53	0.53	0.53	0.53	0.53	0.64	0.64	0.64	0.33	0.33
90G20P	0	0.07	0			0			0				0	0.50
AM32A6U	1.10	1.10	1.10	1.10		1.10			1.10				0	0
MC1A	0.58	0.58	0.58	0.58		0.58	0.58		0.58	0.50	0.50	0.50	0	0
MC11	0		0		0.58	0			0				0	0
MC2A	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.50	0.50	0.50	0.50	0.50
1MC1A	0.58	0.58	0.58	0.58	0.58	0.58	0.58		0.58	0.50	0.50	0.50	0	0
MA1A	0.09		0	0.09		0		0.09	0.09				0	0
TTU228E	0.30	0.30	0			0			0		0.50	0.50	0	0
MJ1	0		0		0.30	0	0.30	0.30	0	0.50			0	0
MJ2A	0		0.30	0.30	0.30	0.30	0.30	0.30	0				0	0
TTU228E18	0.30	0.30	0			0			0		0.50	0.50	0	0
MJ1	0.52		0			0.52			0				0	0
MJ1A	0.52	0.52	0.52			0.52	0.52		0				0	0
MHJ83AE	0.24	0.24	0.24		0.24	0.24			0				0	0
NF2	1.25	1.25	1.25	1.25	1.25	1.25	1.25		1.25	0.83	0.83	0.83	0.50	0.50
M32T1	0.04	0.04	0.04		0.04	0.04	0.04		0				0	0
M27M1	0		0			0			0				0	0

## B. EXAMPLES

### 1. Example 1

Given: F-4 aircraft, H1 gas heater,  $\bar{T} = 50^\circ\text{F}$ ,  $\Delta\bar{T} = 40^\circ\text{F}$ ,  
10 total LTO

Find: Total emissions

Solution:

Step 1: F-4

Step 2: H1 gas heater

Therefore,

$$\gamma_{\text{heater}} = \frac{\left[40 - \bar{T} + \frac{\Delta\bar{T}}{2}\right]^2}{2 \left[\frac{\Delta\bar{T}}{2}\right]^2}$$

$$\gamma_{\text{heater}} = .125$$

Step 3:  $\beta = 1$

Step 4:  $t = .70$  hrs (from Table 3)

Step 5:  $t = \gamma t \beta = .125(.70)(1) = .0875$  hrs

Step 6: From Table 2:

$\pi(\text{CO})$	$= 3376$ g/hr
$\pi(\text{HC})$	$= 212$ g/hr
$\pi(\text{NOX})$	$= 67$ g/hr
$\pi(\text{SOX})$	$= 2.1$ g/hr
$\pi(\text{Part})$	$= 6.1$ g/hr

$$W = \bar{W}L = \frac{\pi \bar{t}L}{1000}$$

$$W(\text{CO}) = \frac{3376(0.0875)(10)}{1000} = 2.954 \text{ kg CO}$$

$$W(\text{HC}) = \frac{212(0.0875)(10)}{1000} = .1855 \text{ kg HC}$$

$$W(\text{NOX}) = \frac{67(0.0875)(10)}{1000} = .0586 \text{ kg NOX}$$

$$W(\text{SOX}) = \frac{2.1(0.0875)(10)}{1000} = .00184 \text{ kg SOX}$$

$$W(\text{Part}) = \frac{6.1(.0875)(10)}{1000} = .00534 \text{ kg Part}$$

2. Example 2

Given: B-52 with 10 total LTO, 14 H1 heaters, 6 LH1 heaters,  $\bar{T} = 50^\circ\text{F}$ ,  $\Delta\bar{T} = 40^\circ\text{F}$

Find: Total emissions

Solution:

Step 1: B-52

Step 2: 14 H1 heaters, 6 LH1 heaters

Therefore,

$$\gamma_{\text{heater}} = \frac{\left[ 40 - \bar{T} + \frac{\Delta\bar{T}}{2} \right]^2}{2 \left[ \frac{\Delta\bar{T}}{2} \right]^2}$$

$$\gamma_{\text{heater}} = .125$$

$$\text{Step 3: } \beta(\text{H1}) = \frac{14}{20} = .70$$

$$\beta(\text{LH1}) = \frac{6}{20} = .30$$

$$\text{Step 4: } t(\text{H1}) = 2.69$$

$$t(\text{LH1}) = 2.69$$

$$\text{Step 5: } \bar{t}(\text{H1}) = \gamma t \beta = (.125)(2.69)(.70) = .235 \text{ hrs}$$

$$\bar{t}(\text{LH1}) = .125(2.69)(.30) = .101 \text{ hrs}$$

Step 6: For H1  $\pi(\text{CO}) = 3376 \text{ g/hr}$   
 $\pi(\text{HC}) = 212.0 \text{ g/hr}$   
 $\pi(\text{NOX}) = 67 \text{ g/hr}$   
 $\pi(\text{SOX}) = 2.1 \text{ g/hr}$   
 $\pi(\text{Part}) = 6.1 \text{ g/hr}$

For 1H1  $\pi(\text{CO}) = 64 \text{ g/hr}$   
 $\pi(\text{HC}) = 28.0 \text{ g/hr}$   
 $\pi(\text{NOX}) = 291 \text{ g/hr}$   
 $\pi(\text{SOX}) = 7.3 \text{ g/hr}$   
 $\pi(\text{Part}) = 21.0 \text{ g/hr}$

$$W = \bar{W}_L = \frac{\pi \bar{t}_L}{1000}$$

$$W(\text{CO}) = \frac{3376(.235)(10)}{1000} + \frac{64(.101)(10)}{1000} = 8.01 \text{ kg CO}$$

$$W(\text{HC}) = \frac{212.0(.235)(10)}{1000} + \frac{28.0(.101)(10)}{1000} = .53 \text{ kg HC}$$

$$W(\text{NOX}) = \frac{67(.235)(10)}{1000} + \frac{291(.101)(10)}{1000} = .45 \text{ kg NOX}$$

$$W(\text{SOX}) = \frac{2.1(.235)(10)}{1000} + \frac{7.3(.101)(10)}{1000} = .01 \text{ kg SOX}$$

$$W(\text{Part}) = \frac{6.1(.235)(10)}{1000} + \frac{21.0(.101)(10)}{1000} = .04 \text{ kg Part}$$

SECTION V  
COMPUTER CALCULATIONS

A. PROCEDURE

The AFESC has adapted the AGEEE handbook for use on the Apple II microcomputer. The program enables the user to save time and effort by inputting minimal information, while eliminating the need to search through tables and make calculations. A copy of the source listing can be found in Appendix A.

B. EXAMPLES

1. Example 1

Given: F-4 aircraft, H1 gas heater,  $\bar{T} = 50^{\circ}\text{F}$ ,  $\Delta \bar{T} = 40^{\circ}\text{F}$ ,  
10 LTOs

Find: Total emissions

Solution:

1. Pick the aircraft you would like to find the AGE pollutant emissions for and enter the name just as it is shown in the menu. F-4
2. How many LTOs do you want the AGE emissions calculated for? 10
3. What is the Annual Mean Temperature (F)? 50
4. What is the Temperature Variation (F)? 40
5. Input necessary AGE information for a heater that best describes your AGE.

Responses: 0 = No emissions calculated for a heater

1 = Hogas

2 = Diesel/JP-4

3 = Both Hogas and Diesel/JP-4

Enter your response. 1

6. Do you have anymore AGE that you would like to calculate the pollutant emissions for, [Y] or [N]? N

Total AGE emissions from all F-4 LTOs (kg)

CO = 2.954

HC = .1855

NOX = .058625

SOX = 1.8375E-03

PM = 5.3375E-03

2. Example 2

Given: B-52 aircraft, 14 H1 heaters, 6 1H1 heaters,

$\bar{T} = 50^{\circ}\text{F}$ ,  $\Delta\bar{T} = 40^{\circ}\text{F}$ , 10 LTOs

Find: Total emissions

Solution:

1. Pick the aircraft you would like to find the AGE pollutant emissions for and enter the name just as it is shown on the menu. B-52
2. How many LTOs do you want the AGE emissions calculated for? 10
3. What is the Annual Mean Temperature (F)? 50
4. What is the Temperature Variation (F)? 40
5. Input necessary AGE information for a heater that best describes your AGE.

Responses: 0 = No emissions calculated for a heater

1 = Mogas

2 = Diesel/JP-4

Enter your response. 3

6. How many Mogas heaters do you have? 6
7. How many Diesel/JP-4 heaters do you have? 14
8. Do you have anymore AGE that you would like to calculate the pollutant emissions for, [Y] or [N]? N

Total AGE emissions from all B-52 LTOs (kg)

CO = 8.01082

HC = .52724

NOX = .4512475

SOX = .01230675

PM = .035541625

## SECTION VI

### CONCLUSIONS

Anyone needing to calculate emissions from aircraft generation equipment no longer has to operate a large air quality model to obtain limited results. With the handbook, a user can compute the emissions on a handheld calculator, or the source listing in Appendix A can be input into a microcomputer for further ease of operation.



## APPENDIX A

### PROGRAM SOURCE LISTING

This appendix presents a source listing for the computer program developed by AFESC to aid in calculating AGE emissions with the Apple II microcomputer.

# LIST

```

10 REM      AIRCRAFT GENERATION
    EQUIPMENT EMISSIONS ESTIMATO
    R-AGEEE
20 REM      DESIGNED BY LISA RAMOS
30 HOME : PRINT "*****
    *****"
40 PRINT : PRINT : PRINT : PRINT
    : PRINT TAB( 11)"AIRCRAFT G
    ENERATION"
50 PRINT : PRINT TAB( 6)"EQUIPM
    ENT EMISSIONS ESTIMATOR"
60 PRINT : PRINT TAB( 17)"-AGEE
    E"
70 PRINT : PRINT : PRINT : PRINT
    : PRINT : PRINT
80 PRINT TAB( 10)"DESIGNED BY:L
    ISA RAMOS"
90 PRINT : PRINT TAB( 22)"AUGUS
    T 2,1983"
100 PRINT : PRINT : PRINT "*****
    *****"
110 FOR PAUSE = 1 TO 5000: NEXT
    PAUSE
120 CLEAR
130 HOME : PRINT "BELOW IS A MEN
    U THAT LISTS THE DIFFERENTAI
    RCRAFT AVAILABLE FOR THIS PR
    OGRAM."
140 FOR PAUSE = 1 TO 2000: NEXT
    PAUSE
150 HOME : PRINT TAB( 13)"FIGHT
    ER AIRCRAFT"
160 PRINT TAB( 12)"-----
    -----"
170 PRINT TAB( 18)"F-4"
180 PRINT : PRINT TAB( 18)"F-15
    "
190 PRINT : PRINT TAB( 18)"F-16
    "
200 PRINT : PRINT TAB( 18)"F-10
    5"
210 PRINT : PRINT TAB( 18)"F-10
    6"
220 PRINT : PRINT TAB( 18)"F-11
    1"
230 PRINT : PRINT : PRINT TAB(
    11)"OBSERVATION AIRCRAFT"
240 PRINT TAB( 10)"-----
    -----"
250 PRINT TAB( 18)"O-2"
260 PRINT : PRINT TAB( 18)"OV-1
    0"
270 PRINT : PRINT : INPUT "IF YO
    U ARE READY TO SEE THE REST
    OF THE MENU, PRESS RE
    TURN.";Z$
280 HOME : PRINT TAB( 14)"CARGO

```

## AIRCRAFT"

```

290 PRINT TAB( 13)"-----
    -----"
300 PRINT TAB( 18)"C-5"
310 PRINT : PRINT TAB( 18)"C-7"
320 PRINT : PRINT TAB( 18)"C-9"
330 PRINT : PRINT TAB( 18)"C-13
    0"
340 PRINT : PRINT TAB( 18)"C-13
    1"
350 PRINT : PRINT TAB( 18)"C-13
    5"
360 PRINT : PRINT TAB( 18)"C-14
    1"
370 PRINT : PRINT TAB( 18)"KC-1
    35"
380 PRINT : PRINT : PRINT : INPUT
    "IF YOU ARE READY TO SEE THE
    REST OF THE MENU, PR
    ESS RETURN.";Z$
390 HOME : PRINT TAB( 13)"TRAIN
    ER AIRCRAFT"
400 PRINT TAB( 12)"-----
    -----"
410 PRINT TAB( 19)"T-33"
420 PRINT : PRINT TAB( 19)"T-37
    "
430 PRINT : PRINT TAB( 19)"T-38
    "
440 PRINT : PRINT TAB( 19)"T-39
    "
450 PRINT : PRINT TAB( 19)"T-43
    "
460 PRINT : PRINT : PRINT TAB(
    13)"ATTACK AIRCRAFT"
470 PRINT TAB( 12)"-----
    -----"
480 PRINT TAB( 19)"A-7"
490 PRINT : PRINT TAB( 19)"A-10
    "
500 PRINT : PRINT TAB( 19)"A-37
    "
510 PRINT : INPUT "IF YOU ARE RE
    ADY TO SEE THE REST O
    F THE MENU, PRESS RETURN.";Z
    $
520 HOME : PRINT TAB( 13)"BOMBE
    R AIRCRAFT"
530 PRINT TAB( 12)"-----
    -----"
540 PRINT TAB( 18)"B-52"
550 PRINT : PRINT TAB( 18)"FB-1
    1"
560 PRINT : PRINT : PRINT TAB(
    16)"HELICOPTER"
570 PRINT TAB( 15)"-----
    -----"
580 PRINT TAB( 19)"H-1"

```

```

590 PRINT : PRINT TAB( 19)"H-3"
600 PRINT : PRINT TAB( 19)"H-53"
610 PRINT : PRINT : INPUT "IF YOU WOULD LIKE TO SEE THE MENU AGAIN, ENTER <Y>, OTHERWISE ENTER <N>.";Y$
620 IF Y$ = "Y" THEN GOTO 130
630 IF Y$ = "YES" THEN GOTO 130
640 IF Y$ = "<Y>" THEN GOTO 130
650 HOME : INPUT "PICK THE AIRCRAFT YOU WOULD LIKE TO FIND THE AGE POLLUTANT EMISSIONS FOR AND ENTER THE AIRCRAFT NAME JUST AS IT IS SHOWN IN THE MENU.";A$
660 PRINT : PRINT : INPUT "HOW MANY LTO'S DO YOU WANT THE AGE EMISSIONS CALCULATED FOR?";NA
670 PRINT : PRINT : INPUT "WHAT IS THE ANNUAL MEAN TEMPERATURE (F)?";MT
680 PRINT : PRINT : INPUT "WHAT IS THE TEMPERATURE VARIATION (F)?";TV
690 HOME : PRINT "INPUT NECESSARY AGE INFORMATION FOR A HEATER THAT BEST DESCRIBES YOUR AGE."
700 PRINT : PRINT "RESPONSES: 0= NO EMISSIONS CALCULATED"
710 PRINT TAB( 14)"FOR A HEATER"
720 PRINT : PRINT TAB( 12)"1=MO GAS"
730 PRINT : PRINT TAB( 12)"2=DIESEL/JP-4"
740 PRINT : PRINT TAB( 12)"3=BOTH MO GAS AND DIESEL/JP-4"
750 PRINT : INPUT "ENTER YOUR RESPONSE.";F1
760 IF F1 = 0 THEN GOTO 1790
770 LET N1 = 40 - MT + TV / 2
780 LET TF = N1 ^ 2 / (2 * (TV / 2) ^ 2)
790 IF N1 < 0 THEN TF = 0
800 IF TF < 0 THEN TF = 0
810 IF TF > 1 THEN TF = 1
820 IF F1 = 1 THEN A1 = 1
830 IF F1 = 2 THEN A1 = 1
840 IF F1 = 1 OR F1 = 2 THEN GOTO 900
850 PRINT : PRINT : INPUT "HOW MANY MO GAS HEATERS DO YOU HAVE?";B1
860 PRINT : PRINT : INPUT "HOW MANY DIESEL/JP-4 HEATERS DO YOU HAVE?";B2
870 LET B3 = B1 + B2
880 LET B4 = B1 / B3
890 LET B5 = B2 / B3
900 IF A$ = "F-4" THEN UT = .7
910 IF A$ = "F-15" THEN UT = .7
920 IF A$ = "F-16" THEN UT = .7
930 IF A$ = "F-105" THEN UT = .7
940 IF A$ = "F-106" THEN UT = .7
950 IF A$ = "F-111" THEN UT = .7
960 IF A$ = "O-2" THEN UT = 0
970 IF A$ = "OV-10" THEN UT = 0
980 IF A$ = "C-5" THEN UT = 3.21
990 IF A$ = "C-7" THEN UT = 3.21
1000 IF A$ = "C-9" THEN UT = 3.21
1010 IF A$ = "C-130" THEN UT = 3.21
1020 IF A$ = "C-131" THEN UT = 3.21
1030 IF A$ = "C-135" THEN UT = 3.21
1040 IF A$ = "C-141" THEN UT = 3.21
1050 IF A$ = "KC-135" THEN UT = 2.87
1060 IF A$ = "T-33" THEN UT = .7
1070 IF A$ = "T-37" THEN UT = .23
1080 IF A$ = "T-38" THEN UT = 0
1090 IF A$ = "T-39" THEN UT = .7
1100 IF A$ = "T-43" THEN UT = 0
1110 IF A$ = "A-7" THEN UT = .23
1120 IF A$ = "A-10" THEN UT = .23
1130 IF A$ = "A-37" THEN UT = .23
1140 IF A$ = "B-52" THEN UT = 2.69
1150 IF A$ = "FB-111" THEN UT = 2.69
1160 IF A$ = "H-1" THEN UT = 1
1170 IF A$ = "H-3" THEN UT = 0
1180 IF A$ = "H-53" THEN UT = 1
1190 IF F1 = 1 OR F1 = 2 THEN GOTO 1230
1200 LET A1 = B4 * TF * UT
1210 LET A2 = B5 * TF * UT
1220 IF F1 = 3 THEN GOTO 1240
1230 LET A1 = A1 * TF * UT
1240 IF F1 = 1 THEN EM = 3376

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1250 IF F1 = 2 THEN EM = 64
1260 IF F1 = 3 THEN U1 = 3376
1270 IF F1 = 3 THEN U2 = 64
1280 IF F1 = 3 THEN GOTO 1310
1290 LET E1 = EM * A1 * NA / 100
0
1300 IF F1 = 1 OR F1 = 2 THEN GOTO
1340
1310 LET C1 = U1 * A1 * NA / 100
0
1320 LET C2 = U2 * A2 * NA / 100
0
1330 LET E1 = C1 + C2
1340 IF F1 = 1 THEN EM = 212
1350 IF F1 = 2 THEN EM = 28
1360 IF F1 = 3 THEN U1 = 212
1370 IF F1 = 3 THEN U2 = 28
1380 IF F1 = 3 THEN GOTO 1410
1390 LET E2 = EM * A1 * NA / 100
0
1400 IF F1 = 1 OR F1 = 2 THEN GOTO
1440
1410 LET C1 = U1 * A1 * NA / 100
0
1420 LET C2 = U2 * A2 * NA / 100
0
1430 LET E2 = C1 + C2
1440 IF F1 = 1 THEN EM = 67
1450 IF F1 = 2 THEN EM = 291
1460 IF F1 = 3 THEN U1 = 67
1470 IF F1 = 3 THEN U2 = 291
1480 IF F1 = 3 THEN GOTO 1510
1490 LET E3 = EM * A1 * NA / 100
0
1500 IF F1 = 1 OR F1 = 2 THEN GOTO
1540
1510 LET C1 = U1 * A1 * NA / 100
0
1520 LET C2 = U2 * A2 * NA / 100
0
1530 LET E3 = C1 + C2
1540 IF F1 = 1 THEN EM = 2.1
1550 IF F1 = 2 THEN EM = 7.3
1560 IF F1 = 3 THEN U1 = 2.1
1570 IF F1 = 3 THEN U2 = 7.3
1580 IF F1 = 3 THEN GOTO 1610
1590 LET E4 = EM * A1 * NA / 100
0
1600 IF F1 = 1 OR F1 = 2 THEN GOTO
1640
1610 LET C1 = U1 * A1 * NA / 100
0
1620 LET C2 = U2 * A2 * NA / 100
0
1630 LET E4 = C1 + C2
1640 IF F1 = 1 THEN EM = 6.1
1650 IF F1 = 2 THEN EM = 21
1660 IF F1 = 3 THEN U1 = 6.1
1670 IF F1 = 3 THEN U2 = 21
1680 IF F1 = 3 THEN GOTO 1710

1690 LET E5 = EM * A1 * NA / 100
0
1700 IF F1 = 1 OR F1 = 2 THEN GOTO
1740
1710 LET C1 = U1 * A1 * NA / 100
0
1720 LET C2 = U2 * A2 * NA / 100
0
1730 LET E5 = C1 + C2
1740 GOSUB 7700
1750 PRINT : PRINT : INPUT "DO Y
OU HAVE ANYMORE 'AGE' THAT Y
OU WOULD LIKE TO CALCUL
ATE THE POLLUTANT EMISSION
S FOR, <Y> OR <N> ?";W$
1760 IF W$ = "N" THEN GOTO 7490
1770 IF W$ = "NO" THEN GOTO 749
0
1780 IF W$ = "<N>" THEN GOTO 74
90
1790 HOME : PRINT "INPUT NECESSA
RY 'AGE' INFORMATION FOR A C
OOLE THAT BEST DESCRIBES YO
UR 'AGE'."
1800 PRINT : PRINT "RESPONSES: 0
=NO EMISSIONS CALCULATED"
1810 PRINT TAB( 14)"FOR A COOLE
R"
1820 PRINT : PRINT TAB( 12)"1=M
OCAS"
1830 PRINT : INPUT "ENTER YOUR R
ESPONSE.";F2
1840 IF F2 = 0 THEN GOTO 2320
1850 TF = 0:A1 = 0:UT = 0:A1 = 0:
EM = 0:E1 = 0:E2 = 0:E3 = 0:
E4 = 0:E5 = 0
1860 LET N2 = MT + TV / 2 - 30
1870 LET TF = N2 ^ 2 / (2 * (TV /
2) ^ 2)
1880 IF N2 < 0 THEN TF = 0
1890 IF TF < 0 THEN TF = 0
1900 IF TF > 1 THEN TF = 1
1910 LET A1 = 1
1920 IF A$ = "F-4" THEN UT = .58
1930 IF A$ = "F-15" THEN UT = 0
1940 IF A$ = "F-16" THEN UT = 0
1950 IF A$ = "F-105" THEN UT = 0
1960 IF A$ = "F-106" THEN UT = .
58
1970 IF A$ = "F-111" THEN UT = 0
1980 IF A$ = "O-2" THEN UT = 0
1990 IF A$ = "OV-10" THEN UT = 0
2000 IF A$ = "C-5" THEN UT = 1.3
3
2010 IF A$ = "C-7" THEN UT = 1.3

```

```

3
2020 IF A$ = "C-9" THEN UT = 0
2030 IF A$ = "C-130" THEN UT = 1
      .33
2040 IF A$ = "C-131" THEN UT = 0
2050 IF A$ = "C-135" THEN UT = 1
      .33
2060 IF A$ = "C-141" THEN UT = 1
      .33
2070 IF A$ = "KC-135" THEN UT =
      .78
2080 IF A$ = "T-33" THEN UT = 0
2090 IF A$ = "T-37" THEN UT = 0
2100 IF A$ = "T-38" THEN UT = 0
2110 IF A$ = "T-39" THEN UT = .5
8
2120 IF A$ = "T-43" THEN UT = 0
2130 IF A$ = "A-7" THEN UT = 0
2140 IF A$ = "A-10" THEN UT = 0
2150 IF A$ = "A-37" THEN UT = 0
2160 IF A$ = "B-52" THEN UT = 2
2
2170 IF A$ = "FB-111" THEN UT =
      0
2180 IF A$ = "H-1" THEN UT = 0
2190 IF A$ = "H-3" THEN UT = 0
2200 IF A$ = "H-53" THEN UT = 0
2210 LET A1 = A1 * TF * UT
2220 LET E1 = 24036 * A1 * NA /
      1000
2230 LET E2 = 933 * A1 * NA / 10
      00
2240 LET E3 = 623 * A1 * NA / 10
      00
2250 LET E4 = 3.9 * A1 * NA / 10
      00
2260 LET E5 = 40 * A1 * NA / 100
      0
2270 COSUB 7700
2280 PRINT : INPUT "DO YOU
      HAVE ANYMORE 'AGE' THAT YOU
      WOULD LIKE TO CALCULATE THE
      POLLUTANT EMISSIONS FOR, <Y>
      OR <N> ?";W$
2290 IF W$ = "N" THEN GOTO 7490
2300 IF W$ = "NO" THEN GOTO 7490
      0
2310 IF W$ = "<N>" THEN GOTO 7490
      90
2320 HOME : PRINT "INPUT NECESSARY
      'AGE' INFORMATION FOR A GENERATOR
      THAT BEST DESCRIBES YOUR 'AGE'."
2330 PRINT : PRINT "RESPONSES: 0
      =NO EMISSIONS CALCULATED"
2340 PRINT TAB(14)"FOR A GENERATOR"
2350 PRINT : PRINT TAB(12)"1=M
      3
      OCAS"
2360 PRINT : PRINT TAB(12)"2=D
      IESEL/JP-4"
2370 PRINT : PRINT TAB(12)"3=D
      IESEL WITH TURBINE ENGINE"
2380 PRINT : INPUT "ENTER YOUR RESPONSE.";F3
2390 IF F3 = 0 THEN GOTO 3550
2400 TF = 0:A1 = 0:UT = 0:A1 = 0:
      EM = 0:E1 = 0:E2 = 0:E3 = 0:
      E4 = 0:E5 = 0
2410 LET TF = 1:A1 = 1
2420 IF A$ = "F-4" AND F3 = 1 THEN
      UT = .53
2430 IF A$ = "F-4" AND F3 = 2 THEN
      UT = 0
2440 IF A$ = "F-4" AND F3 = 3 THEN
      UT = 1.1
2450 IF A$ = "F-15" AND F3 = 1 THEN
      UT = 0
2460 IF A$ = "F-15" AND F3 = 2 THEN
      UT = .07
2470 IF A$ = "F-15" AND F3 = 3 THEN
      UT = 1.1
2480 IF A$ = "F-16" AND F3 = 1 THEN
      UT = 0
2490 IF A$ = "F-16" AND F3 = 2 THEN
      UT = 0
2500 IF A$ = "F-16" AND F3 = 3 THEN
      UT = 1.1
2510 IF A$ = "F-105" AND F3 = 1 THEN
      UT = .53
2520 IF A$ = "F-105" AND F3 = 2 THEN
      UT = 0
2530 IF A$ = "F-105" AND F3 = 3 THEN
      UT = 1.1
2540 IF A$ = "F-106" AND F3 = 1 THEN
      UT = .53
2550 IF A$ = "F-106" AND F3 = 2 THEN
      UT = 0
2560 IF A$ = "F-106" AND F3 = 3 THEN
      UT = 0
2570 IF A$ = "F-111" AND F3 = 1 THEN
      UT = .53
2580 IF A$ = "F-111" AND F3 = 2 THEN
      UT = 0
2590 IF A$ = "F-111" AND F3 = 3 THEN
      UT = 1.1
2600 IF A$ = "O-2" AND F3 = 1 THEN
      UT = .33
2610 IF A$ = "O-2" AND F3 = 2 THEN
      UT = 0
2620 IF A$ = "O-2" AND F3 = 3 THEN
      UT = 0
2630 IF A$ = "OV-10" AND F3 = 1 THEN
      UT = .33
2640 IF A$ = "OV-10" AND F3 = 2 THEN
      UT = .30
2650 IF A$ = "OV-10" AND F3 = 3 THEN
      UT = 0

```

2660 IF A\$ = "C-5" AND F3 = 1 THEN UT = 3.12	2960 IF A\$ = "T-38" AND F3 = 1 THEN UT = .53
2670 IF A\$ = "C-5" AND F3 = 2 THEN UT = 7.6	2970 IF A\$ = "T-38" AND F3 = 2 THEN UT = 0
2680 IF A\$ = "C-5" AND F3 = 3 THEN UT = 3.85	2980 IF A\$ = "T-38" AND F3 = 3 THEN UT = 0
2690 IF A\$ = "C-7" AND F3 = 1 THEN UT = 3.12	2990 IF A\$ = "T-39" AND F3 = 1 THEN UT = .53
2700 IF A\$ = "C-7" AND F3 = 2 THEN UT = 0	3000 IF A\$ = "T-39" AND F3 = 2 THEN UT = 0
2710 IF A\$ = "C-7" AND F3 = 3 THEN UT = 0	3010 IF A\$ = "T-39" AND F3 = 3 THEN UT = 1.1
2720 IF A\$ = "C-9" AND F3 = 1 THEN UT = 3.12	3020 IF A\$ = "T-43" AND F3 = 1 THEN UT = 0
2730 IF A\$ = "C-9" AND F3 = 2 THEN UT = 0	3030 IF A\$ = "T-43" AND F3 = 2 THEN UT = 0
2740 IF A\$ = "C-9" AND F3 = 3 THEN UT = 0	3040 IF A\$ = "T-43" AND F3 = 3 THEN UT = 3.85
2750 IF A\$ = "C-130" AND F3 = 1 THEN UT = 3.12	3050 IF A\$ = "A-7" AND F3 = 1 THEN UT = 0
2760 IF A\$ = "C-130" AND F3 = 2 THEN UT = 0	3060 IF A\$ = "A-7" AND F3 = 2 THEN UT = .5
2770 IF A\$ = "C-130" AND F3 = 3 THEN UT = 0	3070 IF A\$ = "A-7" AND F3 = 3 THEN UT = 4.41
2780 IF A\$ = "C-131" AND F3 = 1 THEN UT = 3.12	3080 IF A\$ = "A-10" AND F3 = 1 THEN UT = .25
2790 IF A\$ = "C-131" AND F3 = 2 THEN UT = 0	3090 IF A\$ = "A-10" AND F3 = 2 THEN UT = 0
2800 IF A\$ = "C-131" AND F3 = 3 THEN UT = 0	3100 IF A\$ = "A-10" AND F3 = 3 THEN UT = 4.41
2810 IF A\$ = "C-135" AND F3 = 1 THEN UT = 3.12	3110 IF A\$ = "A-37" AND F3 = 1 THEN UT = .25
2820 IF A\$ = "C-135" AND F3 = 2 THEN UT = 7.6	3120 IF A\$ = "A-37" AND F3 = 2 THEN UT = 0
2830 IF A\$ = "C-135" AND F3 = 3 THEN UT = 3.85	3130 IF A\$ = "A-37" AND F3 = 3 THEN UT = 0
2840 IF A\$ = "C-141" AND F3 = 1 THEN UT = 3.12	3140 IF A\$ = "B-52" AND F3 = 1 THEN UT = 3.11
2850 IF A\$ = "C-141" AND F3 = 2 THEN UT = 7.6	3150 IF A\$ = "B-52" AND F3 = 2 THEN UT = 5.61
2860 IF A\$ = "C-141" AND F3 = 3 THEN UT = 3.85	3160 IF A\$ = "B-52" AND F3 = 3 THEN UT = 5.06
2870 IF A\$ = "KC-135" AND F3 = 1 THEN UT = 5.16	3170 IF A\$ = "FB-111" AND F3 = 1 THEN UT = 0
2880 IF A\$ = "KC-135" AND F3 = 2 THEN UT = 5.91	3180 IF A\$ = "FB-111" AND F3 = 2 THEN UT = 0
2890 IF A\$ = "KC-135" AND F3 = 3 THEN UT = 4.68	3190 IF A\$ = "FB-111" AND F3 = 3 THEN UT = 5.06
2900 IF A\$ = "T-33" AND F3 = 1 THEN UT = .53	3200 IF A\$ = "H-1" AND F3 = 1 THEN UT = .64
2910 IF A\$ = "T-33" AND F3 = 2 THEN UT = 0	3210 IF A\$ = "H-1" AND F3 = 2 THEN UT = 0
2920 IF A\$ = "T-33" AND F3 = 3 THEN UT = 0	3220 IF A\$ = "H-1" AND F3 = 3 THEN UT = 0
2930 IF A\$ = "T-37" AND F3 = 1 THEN UT = .25	3230 IF A\$ = "H-3" AND F3 = 1 THEN UT = .64
2940 IF A\$ = "T-37" AND F3 = 2 THEN UT = 0	3240 IF A\$ = "H-3" AND F3 = 2 THEN UT = 0
2950 IF A\$ = "T-37" AND F3 = 3 THEN UT = 0	3250 IF A\$ = "H-3" AND F3 = 3 THEN UT = 0

```

3260 IF A$ = "H-53" AND F3 = 1 THEN
    UT = .64
3270 IF A$ = "H-53" AND F3 = 2 THEN
    UT = 0
3280 IF A$ = "H-53" AND F3 = 3 THEN
    UT = 0
3290 LET A1 = A1 * TF * UT
3300 IF F3 = 1 THEN EM = 24124
3310 IF F3 = 2 THEN EM = 294
3320 IF F3 = 3 THEN EM = 1688
3330 LET E1 = EM * A1 * NA / 100
0
3340 IF F3 = 1 THEN EM = 936
3350 IF F3 = 2 THEN EM = 129
3360 IF F3 = 3 THEN EM = 14
3370 LET E2 = EM * A1 * NA / 100
0
3380 IF F3 = 1 THEN EM = 625
3390 IF F3 = 2 THEN EM = 1355
3400 IF F3 = 3 THEN EM = 332
3410 LET E3 = EM * A1 * NA / 100
0
3420 IF F3 = 1 THEN EM = 3.9
3430 IF F3 = 2 THEN EM = 8.8
3440 IF F3 = 3 THEN EM = 79.1
3450 LET E4 = EM * A1 * NA / 100
0
3460 IF F3 = 1 THEN EM = 40
3470 IF F3 = 2 THEN EM = 97
3480 IF F3 = 3 THEN EM = 45
3490 LET E5 = EM * A1 * NA / 100
0
3500 GOSUB 7700
3510 PRINT : PRINT : INPUT "DO YOU HAVE ANYMORE 'AGE' THAT YOU WOULD LIKE TO CALCULATE THE POLLUTANT EMISSIONS FOR, (Y) OR (N) ?";W$
3520 IF W$ = "N" THEN GOTO 7490
3530 IF W$ = "NO" THEN GOTO 7490
0
3540 IF W$ = "(N)" THEN GOTO 7490
3550 HOME : PRINT "INPUT NECESSARY 'AGE' INFORMATION FOR A COMPRESSOR THAT BEST DESCRIBES YOUR 'AGE'."
3560 PRINT : PRINT "RESPONSES: 0 =NO EMISSIONS CALCULATED"
3570 PRINT TAB(14)"FOR A COMPRESSOR"
3580 PRINT : PRINT TAB(12)"1=M OGAS WITH HP=30"
3590 PRINT : PRINT TAB(12)"2=M OGAS WITH HP=10.3"
3600 PRINT : PRINT TAB(12)"3-D IESEL/JP-4"
3610 PRINT : PRINT TAB(12)"4=D IESEL WITH TURBINE ENGINE"
3620 PRINT : INPUT "ENTER YOUR RESPONSE.";F4
3630 IF F4 = 0 THEN GOTO 5130
3640 TF = 0:A1 = 0:UT = 0:A1 = 0:EM = 0:E1 = 0:E2 = 0:E3 = 0:E4 = 0:E5 = 0
3650 LET TF = 1:A1 = 1
3660 IF A$ = "F-4" AND F4 = 1 THEN
    UT = .58
3670 IF A$ = "F-4" AND F4 = 2 THEN
    UT = .33
3680 IF A$ = "F-4" AND F4 = 3 THEN
    UT = .58
3690 IF A$ = "F-4" AND F4 = 4 THEN
    UT = .09
3700 IF A$ = "F-15" AND F4 = 1 THEN
    UT = .58
3710 IF A$ = "F-15" AND F4 = 2 THEN
    UT = .33
3720 IF A$ = "F-15" AND F4 = 3 THEN
    UT = .58
3730 IF A$ = "F-15" AND F4 = 4 THEN
    UT = 0
3740 IF A$ = "F-16" AND F4 = 1 THEN
    UT = .58
3750 IF A$ = "F-16" AND F4 = 2 THEN
    UT = .33
3760 IF A$ = "F-16" AND F4 = 3 THEN
    UT = .58
3770 IF A$ = "F-16" AND F4 = 4 THEN
    UT = 0
3780 IF A$ = "F-105" AND F4 = 1 THEN
    UT = .58
3790 IF A$ = "F-105" AND F4 = 2 THEN
    UT = .33
3800 IF A$ = "F-105" AND F4 = 3 THEN
    UT = .58
3810 IF A$ = "F-105" AND F4 = 4 THEN
    UT = .09
3820 IF A$ = "F-106" AND F4 = 1 THEN
    UT = 0
3830 IF A$ = "F-106" AND F4 = 2 THEN
    UT = .33
3840 IF A$ = "F-106" AND F4 = 3 THEN
    UT = 0
3850 IF A$ = "F-106" AND F4 = 4 THEN
    UT = 0
3860 IF A$ = "F-111" AND F4 = 1 THEN
    UT = .58
3870 IF A$ = "F-111" AND F4 = 2 THEN
    UT = .33
3880 IF A$ = "F-111" AND F4 = 3 THEN
    UT = .58
3890 IF A$ = "F-111" AND F4 = 4 THEN
    UT = 0
3900 IF A$ = "O-2" AND F4 = 1 THEN
    UT = 0
3910 IF A$ = "O-2" AND F4 = 2 THEN
    UT = .5
3920 IF A$ = "O-2" AND F4 = 3 THEN

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3930	IF A\$ = "O-2" AND F4 = 4 THEN	4230	IF A\$ = "C-141" AND F4 = 2 THEN
UT = 0		UT = .92	
3940	IF A\$ = "OV-10" AND F4 = 1 THEN	4240	IF A\$ = "C-141" AND F4 = 3 THEN
UT = 0		UT = .75	
3950	IF A\$ = "OV-10" AND F4 = 2 THEN	4250	IF A\$ = "C-141" AND F4 = 4 THEN
UT = .5		UT = .46	
3960	IF A\$ = "OV-10" AND F4 = 3 THEN	4260	IF A\$ = "KC-135" AND F4 = 1
UT = 0		THEN UT = .49	
3970	IF A\$ = "OV-10" AND F4 = 4 THEN	4270	IF A\$ = "KC-135" AND F4 = 2
UT = 0		THEN UT = .32	
3980	IF A\$ = "C-5" AND F4 = 1 THEN	4280	IF A\$ = "KC-135" AND F4 = 3
UT = .75		THEN UT = .49	
3990	IF A\$ = "C-5" AND F4 = 2 THEN	4290	IF A\$ = "KC-135" AND F4 = 4
UT = .92		THEN UT = .31	
4000	IF A\$ = "C-5" AND F4 = 3 THEN	4300	IF A\$ = "T-33" AND F4 = 1 THEN
UT = .75		UT = .58	
4010	IF A\$ = "C-5" AND F4 = 4 THEN	4310	IF A\$ = "T-33" AND F4 = 2 THEN
UT = .46		UT = .33	
4020	IF A\$ = "C-7" AND F4 = 1 THEN	4320	IF A\$ = "T-33" AND F4 = 3 THEN
UT = .75		UT = .58	
4030	IF A\$ = "C-7" AND F4 = 2 THEN	4330	IF A\$ = "T-33" AND F4 = 4 THEN
UT = .92		UT = 0	
4040	IF A\$ = "C-7" AND F4 = 3 THEN	4340	IF A\$ = "T-37" AND F4 = 1 THEN
UT = .75		UT = 0	
4050	IF A\$ = "C-7" AND F4 = 4 THEN	4350	IF A\$ = "T-37" AND F4 = 2 THEN
UT = 0		UT = 0	
4060	IF A\$ = "C-9" AND F4 = 1 THEN	4360	IF A\$ = "T-37" AND F4 = 3 THEN
UT = .75		UT = 0	
4070	IF A\$ = "C-9" AND F4 = 2 THEN	4370	IF A\$ = "T-37" AND F4 = 4 THEN
UT = 0		UT = 0	
4080	IF A\$ = "C-9" AND F4 = 3 THEN	4380	IF A\$ = "T-38" AND F4 = 1 THEN
UT = .75		UT = 0	
4090	IF A\$ = "C-9" AND F4 = 4 THEN	4390	IF A\$ = "T-38" AND F4 = 2 THEN
UT = 0		UT = .33	
4100	IF A\$ = "C-130" AND F4 = 1 THEN	4400	IF A\$ = "T-38" AND F4 = 3 THEN
UT = .75		UT = 0	
4110	IF A\$ = "C-130" AND F4 = 2 THEN	4410	IF A\$ = "T-38" AND F4 = 4 THEN
UT = .92		UT = .09	
4120	IF A\$ = "C-130" AND F4 = 3 THEN	4420	IF A\$ = "T-39" AND F4 = 1 THEN
UT = .75		UT = .58	
4130	IF A\$ = "C-130" AND F4 = 4 THEN	4430	IF A\$ = "T-39" AND F4 = 2 THEN
UT = .46		UT = .33	
4140	IF A\$ = "C-131" AND F4 = 1 THEN	4440	IF A\$ = "T-39" AND F4 = 3 THEN
UT = .75		UT = .58	
4150	IF A\$ = "C-131" AND F4 = 2 THEN	4450	IF A\$ = "T-39" AND F4 = 4 THEN
UT = .92		UT = .09	
4160	IF A\$ = "C-131" AND F4 = 3 THEN	4460	IF A\$ = "T-43" AND F4 = 1 THEN
UT = .75		UT = 0	
4170	IF A\$ = "C-131" AND F4 = 4 THEN	4470	IF A\$ = "T-43" AND F4 = 2 THEN
UT = 0		UT = 0	
4180	IF A\$ = "C-135" AND F4 = 1 THEN	4480	IF A\$ = "T-43" AND F4 = 3 THEN
UT = .75		UT = 0	
4190	IF A\$ = "C-135" AND F4 = 2 THEN	4490	IF A\$ = "T-43" AND F4 = 4 THEN
UT = .92		UT = 0	
4200	IF A\$ = "C-135" AND F4 = 3 THEN	4500	IF A\$ = "A-7" AND F4 = 1 THEN
UT = .75		UT = .1	
4210	IF A\$ = "C-135" AND F4 = 4 THEN	4510	IF A\$ = "A-7" AND F4 = 2 THEN
UT = .46		UT = .16	
4220	IF A\$ = "C-141" AND F4 = 1 THEN	4520	IF A\$ = "A-7" AND F4 = 3 THEN



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      UT = .1
4530 IF A$ = "A-7" AND F4 = 4 THEN
      UT = .67
4540 IF A$ = "A-10" AND F4 = 1 THEN
      UT = .1
4550 IF A$ = "A-10" AND F4 = 2 THEN
      UT = .16
4560 IF A$ = "A-10" AND F4 = 3 THEN
      UT = .1
4570 IF A$ = "A-10" AND F4 = 4 THEN
      UT = 0
4580 IF A$ = "A-37" AND F4 = 1 THEN
      UT = .1
4590 IF A$ = "A-37" AND F4 = 2 THEN
      UT = .16
4600 IF A$ = "A-37" AND F4 = 3 THEN
      UT = .1
4610 IF A$ = "A-37" AND F4 = 4 THEN
      UT = 0
4620 IF A$ = "B-52" AND F4 = 1 THEN
      UT = 1.03
4630 IF A$ = "B-52" AND F4 = 2 THEN
      UT = .37
4640 IF A$ = "B-52" AND F4 = 3 THEN
      UT = 1.03
4650 IF A$ = "B-52" AND F4 = 4 THEN
      UT = 2.2
4660 IF A$ = "FB-111" AND F4 = 1
      THEN UT = 1.03
4670 IF A$ = "FB-111" AND F4 = 2
      THEN UT = .37
4680 IF A$ = "FB-111" AND F4 = 3
      THEN UT = 1.03
4690 IF A$ = "FB-111" AND F4 = 4
      THEN UT = 0
4700 IF A$ = "H-1" AND F4 = 1 THEN
      UT = .5
4710 IF A$ = "H-1" AND F4 = 2 THEN
      UT = .5
4720 IF A$ = "H-1" AND F4 = 3 THEN
      UT = .5
4730 IF A$ = "H-1" AND F4 = 4 THEN
      UT = 0
4740 IF A$ = "H-3" AND F4 = 1 THEN
      UT = .5
4750 IF A$ = "H-3" AND F4 = 2 THEN
      UT = .5
4760 IF A$ = "H-3" AND F4 = 3 THEN
      UT = .5
4770 IF A$ = "H-3" AND F4 = 4 THEN
      UT = 0
4780 IF A$ = "H-53" AND F4 = 1 THEN
      UT = .5
4790 IF A$ = "H-53" AND F4 = 2 THEN
      UT = .5
4800 IF A$ = "H-53" AND F4 = 3 THEN
      UT = .5
4810 IF A$ = "H-53" AND F4 = 4 THEN
      UT = 0
4820 LET A1 = A1 + TF + UT

      4830 IF F4 = 1 THEN EM = 4685
      4840 IF F4 = 2 THEN EM = 2466
      4850 IF F4 = 3 THEN EM = 122
      4860 IF F4 = 4 THEN EM = 806
      4870 LET E1 = EM + A1 + NA / 100
      0
      4880 IF F4 = 1 THEN EM = 162
      4890 IF F4 = 2 THEN EM = 155
      4900 IF F4 = 3 THEN EM = 65
      4910 IF F4 = 4 THEN EM = 6.7
      4920 LET E2 = EM + A1 + NA / 100
      0
      4930 IF F4 = 1 THEN EM = 122
      4940 IF F4 = 2 THEN EM = 49
      4950 IF F4 = 3 THEN EM = 128
      4960 IF F4 = 4 THEN EM = 159
      4970 LET E3 = EM + A1 + NA / 100
      0
      4980 IF F4 = 1 THEN EM = 1.3
      4990 IF F4 = 2 THEN EM = .79
      5000 IF F4 = 3 THEN EM = 5.6
      5010 IF F4 = 4 THEN EM = 37.8
      5020 LET E4 = EM + A1 + NA / 100
      0
      5030 IF F4 = 1 THEN EM = 7.7
      5040 IF F4 = 2 THEN EM = 4.4
      5050 IF F4 = 3 THEN EM = 24
      5060 IF F4 = 4 THEN EM = 21
      5070 LET E5 = EM + A1 + NA / 100
      0
      5080 GOSUB 7700
      5090 PRINT : PRINT : INPUT "DO Y
      OU HAVE ANYMORE 'AGE' THAT Y
      OU WOULD LIKE TO CALCUL
      ATE THE POLLUTANT EMISSION
      S FOR, <Y> OR <N> ?";W$
      5100 IF W$ = "N" THEN GOTO 7490
      5110 IF W$ = "NO" THEN GOTO 7490
      5120 IF W$ = "<N>" THEN GOTO 74
      90
      5130 HOME : PRINT "INPUT NECESSA
      RY 'AGE' INFORMATION FOR A H
      YDRAULIC TEST STAND THAT BES
      T DESCRIBES YOUR 'AGE'."
      5140 PRINT : PRINT "RESPONSES: 0
      =NO EMISSIONS CALCULATED"
      5150 PRINT TAB( 14)"FOR A HYDRA
      ULIC TEST STAND"
      5160 PRINT : PRINT TAB( 12)"1=M
      OCAS"
      5170 PRINT : INPUT "ENTER YOUR R
      ESPONSE.";F5
      5180 IF F5 = 0 THEN GOTO 5610
      5190 TF = 0:A1 = 0:UT = 0:A1 = 0:
      EM = 0:E1 = 0:E2 = 0:E3 = 0:
      E4 = 0:E5 = 0
      5200 LET TF = 1:A1 = 1
      5210 IF A$ = "F-4" THEN UT = .3

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5220 IF A$ = "F-15" THEN UT = .3
5230 IF A$ = "F-16" THEN UT = 0
5240 IF A$ = "F-105" THEN UT = 0
5250 IF A$ = "F-106" THEN UT = 0
5260 IF A$ = "F-111" THEN UT = 0
5270 IF A$ = "O-2" THEN UT = 0
5280 IF A$ = "OV-10" THEN UT = 0
5290 IF A$ = "C-5" THEN UT = 1.1
      S
5300 IF A$ = "C-7" THEN UT = 0
5310 IF A$ = "C-9" THEN UT = 0
5320 IF A$ = "C-130" THEN UT = 1
      .18
5330 IF A$ = "C-131" THEN UT = 0
5340 IF A$ = "C-135" THEN UT = 0
5350 IF A$ = "C-141" THEN UT = 1
      .18
5360 IF A$ = "KC-135" THEN UT =
      .12
5370 IF A$ = "T-33" THEN UT = 0
5380 IF A$ = "T-37" THEN UT = 0
5390 IF A$ = "T-38" THEN UT = 0
5400 IF A$ = "T-39" THEN UT = 0
5410 IF A$ = "T-43" THEN UT = 0
5420 IF A$ = "A-7" THEN UT = .14
5430 IF A$ = "A-10" THEN UT = 0
5440 IF A$ = "A-37" THEN UT = 0
5450 IF A$ = "B-52" THEN UT = .0
      9
5460 IF A$ = "FB-111" THEN UT =
      0
5470 IF A$ = "H-1" THEN UT = 0
5480 IF A$ = "H-3" THEN UT = .5
5490 IF A$ = "H-53" THEN UT = .5
5500 LET A1 = A1 * TF * UT
5510 LET E1 = 23141 * A1 * NA /
      1000
5520 LET E2 = 902 * A1 * NA / 10
      00
5530 LET E3 = 600 * A1 * NA / 10
      00
5540 LET E4 = 3.4 * A1 * NA / 10
      00
5550 LET E5 = 38 * A1 * NA / 100
      0
5560 COSUB 7700
5570 PRINT : PRINT : INPUT "DO Y
      OU HAVE ANYMORE 'AGE' THAT Y
      OU WOULD LIKE TO CALCUL
      ATE THE POLLUTANT EMISSION
      S FOR, <Y> OR <N> ?";W$

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5580 IF W$ = "N" THEN GOTO 7490
5590 IF W$ = "NO" THEN GOTO 749
      0
5600 IF W$ = "<N>" THEN GOTO 74
      90
5610 HOME : PRINT "INPUT NECESSA
      RY 'AGE' INFORMATION FOR A B
      OMBLIFT THAT BEST DESCRIBES
      YOUR 'AGE'."
5620 PRINT : PRINT "RESPONSES: 0
      =NO EMISSIONS CALCULATED"
5630 PRINT TAB( 14)"FOR A BOMBL
      IFT"
5640 PRINT : PRINT TAB( 12)"I=M
      OGAS"
5650 PRINT : INPUT "ENTER YOUR R
      ESPONSE.";F6
5660 IF F6 = 0 THEN GOTO 6090
5670 TF = 0:A1 = 0:UT = 0:EM = 0:
      A1 = 0:E1 = 0:E2 = 0:E3 = 0:
      E4 = 0:E5 = 0
5680 LET TF = 1:A1 = 1
5690 IF A$ = "F-4" THEN UT = .52
5700 IF A$ = "F-15" THEN UT = 0
5710 IF A$ = "F-16" THEN UT = 0
5720 IF A$ = "F-105" THEN UT = 0
5730 IF A$ = "F-106" THEN UT = 0
5740 IF A$ = "F-111" THEN UT = .
      52
5750 IF A$ = "O-2" THEN UT = 0
5760 IF A$ = "OV-10" THEN UT = 0
5770 IF A$ = "C-5" THEN UT = 0
5780 IF A$ = "C-7" THEN UT = 0
5790 IF A$ = "C-9" THEN UT = 0
5800 IF A$ = "C-130" THEN UT = 0
5810 IF A$ = "C-131" THEN UT = 0
5820 IF A$ = "C-135" THEN UT = 0
5830 IF A$ = "C-141" THEN UT = 0
5840 IF A$ = "KC-135" THEN UT =
      0
5850 IF A$ = "T-33" THEN UT = 0
5860 IF A$ = "T-37" THEN UT = 0
5870 IF A$ = "T-38" THEN UT = 0
5880 IF A$ = "T-39" THEN UT = 0
5890 IF A$ = "T-43" THEN UT = 0
5900 IF A$ = "A-7" THEN UT = 2.1
      1
5910 IF A$ = "A-10" THEN UT = 0
5920 IF A$ = "A-37" THEN UT = 2.
      11
5930 IF A$ = "B-52" THEN UT = 3.

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25
5940 IF A$ = "FB-111" THEN UT =
0
5950 IF A$ = "H-1" THEN UT = 0
5960 IF A$ = "H-3" THEN UT = 0
5970 IF A$ = "H-53" THEN UT = 0
5980 LET A1 = A1 * TF * UT
5990 LET E1 = .4685 * A1 * NA / 1
000
6000 LET E2 = 162 * A1 * NA / 10
00
6010 LET E3 = 122 * A1 * NA / 10
00
6020 LET E4 = .79 * A1 * NA / 10
00
6030 LET E5 = 7.8 * A1 * NA / 10
00
6040 GOSUB 7700
6050 PRINT : PRINT : INPUT "DO Y
OU HAVE ANYMORE 'ACE' THAT Y
OU WOULD LIKE TO CALCUL
ATE THE POLLUTANT EMISSION
S FOR, <Y> OR <N> ?";W$
6060 IF W$ = "N" THEN GOTO 7490
6070 IF W$ = "NO" THEN GOTO 749
0
6080 IF W$ = "<N>" THEN GOTO 74
90
6090 HOME : PRINT "INPUT NECESSA
RY 'ACE' INFORMATION FOR A
LIGHT CART THAT BEST DESCRIB
ES YOUR 'ACE'."
6100 PRINT : PRINT "RESPONSES: 0
=NO EMISSIONS CALCULATED"
6110 PRINT TAB( 14)"FOR A LIGHT
CART"
6120 PRINT : PRINT TAB( 12)"1=M
OCAS"
6130 PRINT : INPUT "ENTER YOUR R
ESPONSE.";F7
6140 IF F7 = 0 THEN GOTO 6570
6150 TF = 0:A1 = 0:UT = 0:EM = 0:
A1 = 0:E1 = 0:E2 = 0:E3 = 0:
E4 = 0:E5 = 0
6160 LET TF = 1:A1 = 1
6170 IF A$ = "F-4" THEN UT = 1.2
5
6180 IF A$ = "F-15" THEN UT = 1.
25
6190 IF A$ = "F-16" THEN UT = 1.
25
6200 IF A$ = "F-105" THEN UT = 1
.25
6210 IF A$ = "F-106" THEN UT = 1
.25
6220 IF A$ = "F-111" THEN UT = 1
.25
6230 IF A$ = "O-2" THEN UT = .5
6240 IF A$ = "OV-10" THEN UT = .

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5
6250 IF A$ = "C-5" THEN UT = 3.1
8
6260 IF A$ = "C-7" THEN UT = 3.1
8
6270 IF A$ = "C-9" THEN UT = 3.1
8
6280 IF A$ = "C-130" THEN UT = 3
.18
6290 IF A$ = "C-131" THEN UT = 3
.18
6300 IF A$ = "C-135" THEN UT = 3
.18
6310 IF A$ = "C-141" THEN UT = 3
.18
6320 IF A$ = "KC-135" THEN UT =
4.66
6330 IF A$ = "T-33" THEN UT = 1.
25
6340 IF A$ = "T-37" THEN UT = 0
6350 IF A$ = "T-38" THEN UT = 0
6360 IF A$ = "T-39" THEN UT = 1.
25
6370 IF A$ = "T-43" THEN UT = 0
6380 IF A$ = "A-7" THEN UT = .23
3
6390 IF A$ = "A-10" THEN UT = .2
3
6400 IF A$ = "A-37" THEN UT = .2
3
6410 IF A$ = "B-52" THEN UT = 3.
36
6420 IF A$ = "FB-111" THEN UT =
3.36
6430 IF A$ = "H-1" THEN UT = .83
6440 IF A$ = "H-3" THEN UT = .83
6450 IF A$ = "H-53" THEN UT = .8
3
6460 LET A1 = A1 * TF * UT
6470 LET E1 = 2466 * A1 * NA / 1
000
6480 LET E2 = 155 * A1 * NA / 10
00
6490 LET E3 = 49 * A1 * NA / 100
0
5500 LET E4 = .74 * A1 * NA / 10
00
5510 LET E5 = 4.4 * A1 * NA / 10
00
5520 GOSUB 7700
5530 PRINT : PRINT : INPUT "DO Y
OU HAVE ANYMORE 'ACE' THAT Y
OU WOULD LIKE TO CALCUL
ATE THE POLLUTANT EMISSION
S FOR, <Y> OR <N> ?";W$
6540 IF W$ = "N" THEN GOTO 7490
6550 IF W$ = "NO" THEN GOTO 749

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0
6560 IF W$ = "<N>" THEN GOTO 74
90
6570 HOME : PRINT "INPUT NECESSA
RY 'AGE' INFORMATION FOR A P
RESSURE TESTER THAT BEST DES
CRIBES YOUR 'AGE'."
6580 PRINT : PRINT "RESPONSES: 0
=NO EMISSIONS CALCULATED"
6590 PRINT TAB( 14)"FOR A PRESS
URE TESTER"
6600 PRINT : PRINT TAB( 12)"1=M
OCAS"
6610 PRINT : INPUT "ENTER YOUR R
ESPONSE.";F8
6620 IF F8 = 0 THEN GOTO 7050
6630 TF = 0:A1 = 0:A1 = 0:UT = 0:
EM = 0:E1 = 0:E2 = 0:E3 = 0:
E4 = 0:E5 = 0
6640 LET TF = 1:A1 = 1
6650 IF A$ = "F-4" THEN UT = .04
6660 IF A$ = "F-15" THEN UT = .0
4
6670 IF A$ = "F-16" THEN UT = .0
4
6680 IF A$ = "F-105" THEN UT = 0
6690 IF A$ = "F-106" THEN UT = .
04
6700 IF A$ = "F-111" THEN UT = .
04
6710 IF A$ = "O-2" THEN UT = 0
6720 IF A$ = "OV-10" THEN UT = 0
6730 IF A$ = "C-5" THEN UT = 0
6740 IF A$ = "C-7" THEN UT = 0
6750 IF A$ = "C-9" THEN UT = 0
6760 IF A$ = "C-130" THEN UT = 0
6770 IF A$ = "C-131" THEN UT = 0
6780 IF A$ = "C-135" THEN UT = 0
6790 IF A$ = "C-141" THEN UT = 0
6800 IF A$ = "KC-135" THEN UT =
0
6810 IF A$ = "T-33" THEN UT = .0
4
6820 IF A$ = "T-37" THEN UT = 0
6830 IF A$ = "T-38" THEN UT = 0
6840 IF A$ = "T-39" THEN UT = 0
6850 IF A$ = "T-43" THEN UT = 0
6860 IF A$ = "A-7" THEN UT = .13
6870 IF A$ = "A-10" THEN UT = .1
3
6880 IF A$ = "A-37" THEN UT = 0
6890 IF A$ = "B-52" THEN UT = 0

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6900 IF A$ = "FB-111" THEN UT =
0
6910 IF A$ = "H-1" THEN UT = 0
6920 IF A$ = "H-3" THEN UT = 0
6930 IF A$ = "H-53" THEN UT = 0
6940 LET A1 = A1 * TF * UT
6950 LET E1 = 21530 * A1 * NA /
1000
6960 LET E2 = 846 * A1 * NA / 10
00
6970 LET E3 = 558 * A1 * NA / 10
00
6980 LET E4 = 2.4 * A1 * NA / 10
00
6990 LET E5 = 35 * A1 * NA / 100
0
7000 GOSUB 7700
7010 PRINT : PRINT : INPUT "DO Y
OU HAVE ANYMORE 'AGE' THAT Y
OU WOULD LIKE TO CALCUL
ATE THE POLLUTANT EMISSION
S FOR, <Y> OR <N> ?";W$
7020 IF W$ = "N" THEN GOTO 7490
7030 IF W$ = "NO" THEN GOTO 749
0
7040 IF W$ = "<N>" THEN GOTO 74
90
7050 HOME : PRINT "INPUT NECESSA
RY 'AGE' INFORMATION FOR A J
ACKING MANIFOLD THAT BEST DE
SCRIBES YOUR 'AGE'."
7060 PRINT : PRINT "RESPONSES: 0
=NO EMISSIONS CALCULATED"
7070 PRINT TAB( 14)"FOR A JACKI
NG MANIFOLD"
7080 PRINT : PRINT TAB( 12)"1=M
OCAS"
7090 PRINT : INPUT "ENTER YOUR R
ESPONSE.";F9
7100 IF F9 = 0 THEN GOTO 7490
7110 TF = 0:A1 = 0:UT = 0:A1 = 0:
EM = 0:E1 = 0:E2 = 0:E3 = 0:
E4 = 0:E5 = 0
7120 LET TF = 1:A1 = 1
7130 IF A$ = "F-4" THEN UT = 0
7140 IF A$ = "F-15" THEN UT = 0
7150 IF A$ = "F-16" THEN UT = 0
7160 IF A$ = "F-105" THEN UT = 0
7170 IF A$ = "F-106" THEN UT = 0
7180 IF A$ = "F-111" THEN UT = 0
7190 IF A$ = "O-2" THEN UT = 0
7200 IF A$ = "OV-10" THEN UT = 0
7210 IF A$ = "C-5" THEN UT = .38
7220 IF A$ = "C-7" THEN UT = 0

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7230 IF A$ = "C-9" THEN UT = 0
7240 IF A$ = "C-130" THEN UT = .
38
7250 IF A$ = "C-131" THEN UT = 0
7260 IF A$ = "C-135" THEN UT = .
38
7270 IF A$ = "C-141" THEN UT = .
38
7280 IF A$ = "KC-135" THEN UT =
.19
7290 IF A$ = "T-33" THEN UT = 0
7300 IF A$ = "T-37" THEN UT = 0
7310 IF A$ = "T-38" THEN UT = 0
7320 IF A$ = "T-39" THEN UT = 0
7330 IF A$ = "T-43" THEN UT = 0
7340 IF A$ = "A-7" THEN UT = 0
7350 IF A$ = "A-10" THEN UT = 0
7360 IF A$ = "A-37" THEN UT = 0
7370 IF A$ = "B-52" THEN UT = .4

7380 IF A$ = "FB-111" THEN UT =
0
7390 IF A$ = "H-1" THEN UT = 0
7400 IF A$ = "H-3" THEN UT = 0
7410 IF A$ = "H-53" THEN UT = 0
7420 LET A1 = A1 * TF * UT
7430 LET E1 = 4367 * A1 * NA / 1
000
7440 LET E2 = 152 * A1 * NA / 10
00
7450 LET E3 = 113 * A1 * NA / 10
00
7460 LET E4 = 1.1 * A1 * NA / 10
00
7470 LET E5 = 7.1 * A1 * NA / 10
00
7480 GOSUB 7700
7490 HOME : INPUT "IF YOU WOULD
LIKE TO PRINT YOUR RESULTS O
N THE PRINTER, ENTER <Y>, OT
HERWISE ENTER <N>.";P$
7500 IF P$ = "N" THEN GOTO 7550

7510 IF P$ = "NO" THEN GOTO 755
0
7520 IF P$ = "<N>" THEN GOTO 75
50
7530 PRINT : INPUT "MAKE SURE YO
UR PRINTER IS TURNED ON AND
IS ON LINE. IF YOUR PRINTER
IS TURNED ONPRESS RETURN.";R
$
7540 PR# 1
7550 HOME : PRINT TAB( 7)"TOTAL
'AGE' EMISSIONS FROM ALL"
7560 PRINT TAB( 13)A$;" LTO'S (
KC)"
7570 PRINT TAB( 5)"-----
-----"

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7580 PRINT : PRINT : PRINT TAB(
15)"CO = ";S1
7590 PRINT : PRINT TAB( 15)"HC
= ";S2
7600 PRINT : PRINT TAB( 15)"NOX
= ";S3
7610 PRINT : PRINT TAB( 15)"SOX
= ";S4
7620 PRINT : PRINT TAB( 15)"PM
= ";S5
7630 PR# 0
7640 PRINT : PRINT : PRINT : INPUT
"IF YOU WOULD LIKE TO RUN TH
IS PROGRAM AGAIN ENTER <Y>
, OTHERWISE ENTER <N>.";R1$
7650 IF R1$ = "Y" THEN GOTO 120

7660 IF R1$ = "YES" THEN GOTO 1
20
7670 IF R1$ = "<Y>" THEN GOTO 1
20
7680 PRINT : PRINT : PRINT "PROC
RAM END"
7690 END
7700 LET S1 = S1 + E1
7710 LET S2 = S2 + E2
7720 LET S3 = S3 + E3
7730 LET S4 = S4 + E4
7740 LET S5 = S5 + E5
7750 RETURN

```

#### REFERENCES

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3. Sickles, J.E. and J.G. Haidt, Development of a Computer Emission Inventory Routine for Aircraft Ground Support Equipment, Volume 1, Air Force Engineering and Services Center, Tyndall Air Force Base, Florida, 32403, 1981.

